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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/666,514	09/18/2003	Jung-Min Ro	678-1270 (P11303)	9188

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THE FARRELL LAW FIRM, P.C.  
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EXAMINER
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HARPER, KEVIN C

ART UNIT	PAPER NUMBER
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2616

MAIL DATE	DELIVERY MODE
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06/28/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Office Action Summary**

Application No.

10/666,514

Applicant(s)

RO ET AL.

Examiner

Kevin Harper

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 18 September 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-10 and 12-23 is/are rejected.
- 7) ☒ Claim(s) 5 and 11 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>10/03</u> . | 6) <input type="checkbox"/> Other: _____  |

***Priority***

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-4, 6-10 and 12-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Magee et al. (US 2003/0227978) in view of Kjeldsen et al. (US 2003/0231714).

1. Regarding claims 1-4, 7-8, 10 and 14, Magee discloses a method of transmitting an OFDM symbol (fig. 1), where the symbol includes a guard interval (fig. 1, item 130, L and V) and a data interval (item 140). The method comprises copying data in a data row to be transmitted (fig. 1, item 140; para. 5; note: cyclic prefix and postfix), filling the copied data (V)

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and unique words (L) in the guard interval (L+V of item 140), and transmitting the OFDM symbol (item 145). Further regarding claim 10, the second copied data is the cyclic postfix L (fig. 1), representing the unique words. Further regarding claim 14, an apparatus performs the method and comprises a guard interval filling means and a selection means (para. 5, lines 3-5).

2. However, Magee does not disclose providing unique words having a constant amplitude and non-periodic auto-correlation characteristic. Kjeldsen discloses providing a unique word having CAZAC properties (para. 70, last eight lines; para. 71, lines 1-4). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to have unique words in the guard interval of Magee that provide a constant amplitude and non-periodic auto-correlation characteristic in order to better detect the OFDM symbol (Kjeldsen, para. 71, lines 4-10).

3. Regarding claims 6, 9 and 13, the unique words are pilot data (fig. 1; note cyclic postfix for determining OFDM symbol boundaries).

4. Regarding claim 12, the cyclic prefix L is copied at the end of a second data row portion (fig. 1).

5. Regarding claim 15, Magee in view of Kjeldsen does not disclose a buffer and a control unit. However, one skilled in the art would recognize that a buffer and a control unit are common components for a CPE equipment. Therefore, it would have been obvious to provide a buffer for storing unique words and a control unit for controlling a selection means in the invention of Magee and Kjeldsen in order to provide proper implementation of the method.

6. Regarding claims 16, 18 and 20-22, these limitations have been addressed in the rejection of claim 1 above (fig. 1; note the guard interval represents the cyclic prefix located before and

after the data symbol, and the unique words represent the cyclic postfix L located before and after the data symbol).

7. Regarding claims 17, 19 and 23, the function of the apparatus and the location of data words do not provide a structural difference from the prior art (MPEP 2114).

#### ***Allowable Subject Matter***

8. Claims 5 and 11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

#### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Harper whose telephone number is 571-272-3166. The examiner can normally be reached weekdays from 11:00 AM to 7:00 PM ET.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynn Feild, can be reached at 571-272-2092. The centralized fax number for the Patent Office is 571-273-8300. For non-official communications, the examiner's personal fax number is 571-273-3166 and the examiner's e-mail address is kevin.harper@uspto.gov.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications associated with a customer number is available through Private PAIR only. For

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more information about the PAIR system, see [portal.uspto.gov](http://portal.uspto.gov). Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'K. Harper', with a stylized, cursive script.

Kevin C. Harper

June 23, 2007